FIG. 6B depicts a pogo pin **650** that differs slightly from pogo pin **600** in that rear housing component **614** utilizes a press-fit feature to couple with front housing component **656**. In some embodiments, the press-fit feature includes ridges that embed themselves in the interior surface of front housing component **656**, so that a permanent coupling between front housing component **656** and rear housing component **654** is achieved. FIG. 6B also depicts connector **670**, with which pogo pin **650** is configured to electrically couple. As depicted in FIG. 6B, pogo pin **650** is separated from electronic device by a distance sufficient to prevent substantial interaction between movable magnet **652** and external magnet **672**. The polarity of movable magnet **652** can be arranged so that interaction with an external magnet **672** of connector **670** results in a magnetic force that causes movable magnet **652** to compress spring **658** once the distance between magnet **652** and **672** gets small enough, as depicted in FIG. 6C. Once pogo pin **650** is drawn far enough away from external magnet **672**, spring **658** biases movable magnet **652** back to the position shown in FIG. 6B.

FIG. 6C also depicts how electrical contact **660** can be depressed slightly into the front opening defined by front housing component **656** on account of physical contact between contact area **674** and electrical contact **660**. The inclusion of movable magnet **652** essentially increases the contact force between electrical contact **660** and contact area **674**, thereby increasing the efficiency of the electrical connection. In some embodiments, a size and/or strength of springs **610** and **658** can be reduced on account of the additional force provided by movable magnets **602** and **652**. While no electrically conductive pathways are depicted in FIGS. 6A-6C it should be understood that any of the depicted pogo pins **600**-**650** can be integrated with other electrical components by electrically conductive pathways similar to the ones depicted in FIGS. 5A-5B.

FIGS. 7A-7B show first and second positions of an electrical connector **700** utilizing pogo pins similar to those described in FIGS. 5A and 5B. In particular, FIG. 7A shows multiple pogo pins **550** protruding from a mating component **704**. While three pogo pins **550** are depicted it should be understood that a larger or smaller amount of pins can be used depending on multiple design factors. Mating component **704** can be formed from a magnetically attractable or in some cases magnetic material. While all of mating component **704** is depicted as having a P1 polarity, it should be understood that mating component **704** can also be magnetized to have multiple poles with different polarities. An exterior facing surface of mating component **704** can be designed to contact and adhere to a connector to which electrical connector **700** is configured to be electrically coupled. Electrical connector **700** can include a series of magnets **706** positioned beneath mating component **704**. Magnets **706** can be configured to attract mating component **704** so it remains in a stowed position (depicted in FIG. 6A) regardless of an orientation of electrical connector **700**.

FIG. 7B shows how mating component **704** can move from the stowed position depicted in FIG. 7A to a mating position. The movement from the stowed position to the mating position depicted in FIG. 7B can be achieved by the application of an external magnetic field to mating component **704**. When the external magnetic field applied to mating component **704** becomes large enough to exceed the strength of the magnetic field emitted by magnets **706**, mating component **704** transitions from the stowed position to the mating position. The mating position can be configured to reduce the escape of stray flux when electrical connector **700** is in use. For example, the protruding portion of mating component **704** can be received into a receptacle connector having a recess that substantially blocks the escape of any magnetic field lines being emitted from mating component **704**. The magnetic attraction between mating component **704** and magnetically attractable or magnetic materials within another connector with which electrical connector **700** is engaged can also improve the mechanical coupling between electrical connector **700** and the other connector (not depicted).

FIG. 7C shows an alternate embodiment in which magnetic pogo pins **650** similar to the pins depicted in FIGS. 6A-6C are utilized. It should be noted that the movable magnets within the pogo pins can still be attracted and contribute to compression of corresponding pogo pins. In embodiments where mating component **754** is a multi-pole magnet (as depicted) the movable magnet configuration can work on account of the parallel field lines caused by the multiple adjacent poles cancelling one another out in the region of the pogo pin. Consequently, the movable magnets can still be utilized to augment the strength of the springs. In some embodiments, the polarity of magnets **652** can alternate or vary in another pattern to correspond to a pattern established by the receptacle connector. It should be noted that in addition to mating component **754** being configured to extend out to the mating position, connector **750** can be configured to shift laterally to align with the receptacle connector. In some embodiments, connector **750** could be positioned in a channel allowing the electrical connector to move laterally to accommodate any lateral alignment problems.

FIGS. 8A-8B show cross-sectional views of magnetic ball style pogo pins **800** and **850**. FIG. 8A depicts a unibody housing **802** while FIG. 8B depicts a two-part housing including front housing component **804** and rear housing component **806**. Both have electrical contacts with ball designs that allows for free rotation of electrical contacts **808** in many different directions. In some embodiments, electrical contacts **808** can take the form of a non-conductive spherical substrate plated in electrically conductive material along the lines of gold or copper. In this way, electricity travelling along the surface of electrical contacts **808** can conduct the electricity efficiently to housing **802** and housing component **604**. The depicted design also includes movable magnet **810** configured to increase a preload generated by internal spring **812**, by virtue of attraction between movable magnet **810** and magnetic ball contact **808**. Pogo pins **800** and **850** also include spring coupling devices **814** with protrusions engaged within internal spring **812**. The protrusion includes a slanting surface that allows a lateral force to be imparted that biases electrical contact **808** towards an internal surface of housing **802** as depicted in FIG. 8A. The lateral force can be applied to improve the contact force between electrical contact **808** and housing **802**, thereby improving the flow of electricity through pogo pin **800**.

Electrical Connector Embodiments:

FIGS. 9A-9B show top views of a magnetic electrical connector **900**. Magnetic electrical connector includes power and/or data circuits **902** that are routed to electrical contacts **904** by electrically conductive pathway **906**. Electrically conductive pathway **906** can be made up of one or more wires that carry discrete signals to and from each of electrical contacts **904**. In some embodiments, connector **900** can be include separate electrically conductive pathways **906** that run to each of electrical contacts **904**. Electrical contacts **904** at least partially surround a movable magnet **908**. Movable magnet **908** can be held in a retracted